



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2022-0292; Project Identifier AD-2021-01297-E]

RIN 2120-AA64

Airworthiness Directives; International Aero Engines, LLC Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to adopt a new airworthiness directive (AD) for certain International Aero Engines, LLC (IAE LLC) PW1122G-JM, PW1124G1-JM, PW1124G-JM, PW1127G1-JM, PW1127GA-JM, PW1127G-JM, PW1129G-JM, PW1130G-JM, PW1133GA-JM, and PW1133G-JM model turbofan engines. This proposed AD was prompted by an analysis of an event involving an International Aero Engines AG (IAE AG) V2533-A5 model turbofan engine, which experienced an uncontained failure of a high-pressure turbine (HPT) 1st-stage disk that resulted in high-energy debris penetrating the engine cowling. This proposed AD would require performance of an ultrasonic inspection (USI) of the HPT 1st-stage disk and HPT 2nd-stage disk and, depending on the results of the inspections, replacement of the HPT 1st-stage disk or HPT 2nd-stage disk. The FAA is proposing this AD to address the unsafe condition on these products.

DATES: The FAA must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <https://www.regulations.gov>. Follow the instructions for submitting comments.

- Fax: (202) 493-2251.

- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this NPRM, contact International Aero Engines, LLC, 400 Main Street, East Hartford, CT 06118; phone: (860) 690-9667; email: help24@pw.utc.com; website: <http://fleetcare.prattwhitney.com>. You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (817) 222-5110.

Examining the AD Docket

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2022-0292; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, any comments received, and other information. The street address for Docket Operations is listed above.

FOR FURTHER INFORMATION CONTACT: Mark Taylor, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7229; email: Mark.Taylor@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under ADDRESSES. Include “Docket No. FAA-2022-0292; Project Identifier AD-2021-01297-E” at the beginning of your comments. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. The FAA will consider all comments received by the closing date and may amend this proposal because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to <https://www.regulations.gov>, including any

personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this NPRM.

Confidential Business Information

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this NPRM contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this NPRM, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this NPRM. Submissions containing CBI should be sent to Mark Taylor, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

Background

On March 18, 2020, an Airbus Model A321-231 airplane, powered by IAE AG V2533-A5 model turbofan engines, experienced an uncontained HPT 1st-stage disk failure that resulted in high-energy debris penetrating the engine cowling. Based on a preliminary analysis of this event, on March 21, 2020, the FAA issued Emergency AD 2020-07-51 (followed by publication in the *Federal Register* on April 13, 2020, as a Final Rule, Request for Comments (85 FR 20402)), which requires the removal from service of certain HPT 1st-stage disks installed on IAE AG V2522-A5, V2524-A5, V2525-D5, V2527-A5, V2527E-A5, V2527M-A5, V2528-D5, V2530-A5, and V2533-A5 model turbofan engines.

Based on the root cause analysis performed since that March 2020 event, Pratt & Whitney (PW) identified a different population of HPT 1st-stage disks and HPT 2nd-stage disks that are subject to the same unsafe condition identified in AD 2020-07-51. In response, the FAA issued AD 2021-19-10 on September 10, 2021 (86 FR 50610), which requires the removal from service of certain HPT 1st-stage disks and HPT 2nd-stage

disks installed on IAE LLC PW1122G-JM, PW1124G1-JM, PW1124G-JM, PW1127G1-JM, PW1127GA-JM, PW1127G-JM, PW1129G-JM, PW1130G-JM, PW1133GA-JM, and PW1133G-JM model turbofan engines.

Since the FAA issued AD 2021-19-10, PW identified another subpopulation of HPT 1st-stage disks and HPT 2nd-stage disks that require inspection and possible removal from service. Included in this additional subpopulation of HPT 1st-stage disks and HPT 2nd-stage disks are those installed on the model turbofan engines affected by this proposed AD. This proposed AD would require performance of a USI on the remaining high-risk subpopulation of HPT 1st-stage disks and HPT 2nd-stage disks and, depending on the results of the inspections, replacement of the HPT 1st-stage disk or HPT 2nd-stage disk. This condition, if not addressed, could result in uncontained HPT disk failure, release of high-energy debris, damage to the engine, damage to the airplane, and loss of the airplane.

FAA's Determination

The FAA is issuing this NPRM after determining that the unsafe condition described previously is likely to exist or develop on other products of the same type design.

Related Service Information under 1 CFR Part 51

The FAA reviewed PW Service Bulletin (SB) PW1000G-C-72-00-0188-00A-930A-D, Issue No: 001, dated September 13, 2021 (PW SB PW1000G-C-72-00-0188-00A-930A-D). This SB specifies procedures for performing a USI of the HPT 1st-stage disk and the HPT 2nd-stage disk, identified by part number and serial number, installed on IAE LLC PW1124G1-JM, PW1127G-JM, PW1127GA-JM, PW1129G-JM, PW1130G-JM, PW1133G-JM, and PW1133GA-JM model turbofan engines. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in ADDRESSES.

Other Related Service Information

The FAA reviewed PW SB PW1000G-C-72-00-0112-00A-930A-D, Issue No: 005, dated July 22, 2021. This SB describes procedures for replacing the HPT 1st-stage

disk, HPT 2nd-stage disk, and rotating hardware. This SB also increases the life limit of the HPT hardware by introducing a new configuration of rotating hardware.

Proposed AD Requirements in this NPRM

This proposed AD would require the performance of a USI of the HPT 1st-stage disk and HPT 2nd-stage disk and, depending on the results of the inspections, replacement of the HPT 1st-stage disk or HPT 2nd-stage disk.

Differences Between this Proposed AD and the Service Information

PW SB PW1000G-C-72-00-0188-00A-930A-D, Applicability, identifies IAE LLC PW1127G-JM, PW1127GA-JM, PW1130G-JM, PW1124G1-JM, PW1129G-JM, PW1133G-JM, and PW1133GA-JM model turbofan engines. The FAA determined that IAE LLC PW1122G-JM, PW1124G-JM, and PW1127G1-JM model turbofan engines are of the same type design and are subject to the same unsafe condition. Therefore, the FAA included IAE LLC PW1122G-JM, PW1124G-JM, and PW1127G1-JM model turbofan engines in the applicability of this proposed AD.

PW SB PW1000G-C-72-00-0188-00A-930A-D uses the term “hub” to describe the HPT 1st-stage disk and HPT 2nd-stage disk, while this proposed AD uses the term “disk.”

Costs of Compliance

The FAA estimates that this AD, if adopted as proposed, would affect 189 engines installed on airplanes of U.S. registry.

The FAA estimates the following costs to comply with this proposed AD:

Estimated costs

Action	Labor Cost	Parts Cost	Cost per product	Cost on U.S. operators
USI the HPT 1st-stage disk and HPT 2nd-stage disk (also includes estimated costs for disassembly of the engine and removal of the	204 work-hours x \$85 per hour = \$17,340	\$0	\$17,340	\$3,277,260

HPT 1st-stage disk and HPT 2nd-stage disk)				
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The FAA estimates the following costs to do any necessary replacement that would be required based on the results of the proposed inspection. The agency has no way of determining the number of aircraft that might need this replacement:

On-condition costs

Action	Labor Cost	Parts Cost	Cost per product
Replace the HPT 1st-stage disk or HPT 2nd-stage disk	1 work-hour x \$85 per hour = \$85	\$171,430	\$171,515

The FAA has included all known costs in its cost estimate. According to the manufacturer, however, some of the costs of this proposed AD may be covered under warranty, thereby reducing the cost impact on affected operators.

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

(1) Is not a “significant regulatory action” under Executive Order 12866,

(2) Would not affect intrastate aviation in Alaska, and

(3) Would not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

International Aero Engines, LLC: Docket No. FAA-2022-0292; Project Identifier AD-2021-01297-E.

(a) Comments Due Date

The FAA must receive comments on this airworthiness directive (AD) by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to International Aero Engines, LLC PW1122G-JM, PW1124G1-JM, PW1124G-JM, PW1127G1-JM, PW1127GA-JM, PW1127G-JM, PW1129G-JM, PW1130G-JM, PW1133GA-JM, and PW1133G-JM model turbofan engines with engine serial numbers P770101 through P772647.

(d) Subject

Joint Aircraft System Component (JASC) Code 7250, Turbine Section.

(e) Unsafe Condition

This AD was prompted by an analysis of an event involving an International Aero Engines AG V2533-A5 model turbofan engine, which experienced an uncontained failure of a high-pressure turbine (HPT) 1st-stage disk that resulted in high-energy debris penetrating the engine cowling. The FAA is issuing this AD to prevent failure of the HPT 1st-stage disk and HPT 2nd-stage disk. The unsafe condition, if not addressed, could result in uncontained HPT disk failure, release of high-energy debris, damage to the engine, damage to the airplane, and loss of the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Required Actions

(1) For affected engines that have not incorporated Pratt & Whitney (PW) Service Bulletin (SB) PW1000G-C-72-00-0112-00A-930A-D, Issue No: 005, dated July 22, 2021 (PW SB PW1000G-C-72-00-0112-00A-930A-D), at the next engine shop visit after the effective date of this AD, perform the following:

(i) Ultrasonic inspection (USI) of the HPT 1st-stage disk using the Accomplishment Instructions, paragraph 9.A. or B., as applicable, of PW SB PW1000G-C-72-00-0188-00A-930A-D, Issue No: 001, dated September 13, 2021 (PW SB PW1000G-C-72-00-0188-00A-930A-D); and

(ii) USI of the HPT 2nd-stage disk using the Accomplishment Instructions, paragraph 9.C. or D., as applicable, of PW SB PW1000G-C-72-00-0188-00A-930A-D.

(2) For affected engines that have incorporated PW SB PW1000G-C-72-00-0112-00A-930A-D, with an installed HPT 1st-stage disk having a serial number (S/N) identified in the Accomplishment Instructions, Table 2., of PW SB PW1000G-C-72-00-0188-00A-930A-D, at the next engine shop visit after the effective date of this AD, perform a USI of the HPT 1st-stage disk using the Accomplishment Instructions, paragraph 9.A. or B., as applicable, of PW SB PW1000G-C-72-00-0188-00A-930A-D.

(3) For affected engines that have incorporated PW SB PW1000G-C-72-00-0112-00A-930A-D, with an installed HPT 2nd-stage disk having an S/N identified in the Accomplishment Instructions, Table 3., of PW SB PW1000G-C-72-00-0188-00A-930A-

D, at the next engine shop visit after the effective date of this AD, perform a USI of the HPT 2nd-stage disk using the Accomplishment Instructions, paragraph 9.C. or D., of PW SB PW1000G-C-72-00-0188-00A-930A-D.

(4) Based on the results of the USIs required by paragraphs (g)(1) through (3) of this AD, if any HPT 1st-stage disk or HPT 2nd-stage disk does not pass the USI, as specified in the Accomplishment Instructions, paragraphs 9.A. through D., of PW SB PW1000G-C-72-00-0188-00A-930A-D, as applicable, before further flight, remove the HPT 1st-stage disk or HPT 2nd-stage disk from service and replace with a part eligible for installation.

Note 1 to paragraph (g): For affected engines that have incorporated PW SB PW1000G-C-72-00-0112-00A-930A-D and do not require an inspection per paragraph (g)(2) or (3) of this AD, no further action is required.

(h) Definitions

(1) For the purpose of this AD, a “part eligible for installation” is:

(i) Any HPT 1st-stage disk that passed the USI required by paragraphs (g)(1)(i) and (g)(2) of this AD.

(ii) Any HPT 2nd-stage disk that passed the USI required by paragraphs (g)(1)(ii) and (g)(3) of this AD.

(2) For the purpose for this AD, an “engine shop visit” is the induction of an engine into the shop for maintenance involving the separation of the “M” flange. Separation of the “M” flange solely for the purposes of transportation without subsequent engine maintenance does not constitute an engine shop visit.

(i) Alternative Methods of Compliance (AMOCs)

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (j)(1) of this AD and email to: ANE-AD-AMOC@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(j) Related Information

(1) For more information about this AD, contact Mark Taylor, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7229; email: Mark.Taylor@faa.gov.

(2) For service information identified in this AD, contact International Aero Engines, LLC, 400 Main Street, East Hartford, CT 06118; phone: (860) 690-9667; email: help24@pw.utc.com; website: <http://fleetcare.prattwhitney.com>. You may view this referenced service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (817) 222-5110.

Issued on March 18, 2022.

Lance T. Gant, Director,
Compliance & Airworthiness Division,
Aircraft Certification Service.

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